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Statistical analysis of laser-interferometric detector Dylkin-1 data and data on seismic activity

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Abstract

This work presents statistical analysis of data collected from laser interferometric detector "Dylkin-1" and nearby seismic stations. The final goal of Dylkin project consists in creating detector of theoretically predicted gravitational waves produced by binary relativistic astrophysical objects. Currently, works are underway to improve sensitivity of detector by 2-3 orders. The goals of this research were to test isolation of detector from noise caused by seismic waves and to find out whether it is sensitive to variations in the gradient of gravitational potential (acceleration of free fall) caused by free Earth oscillations. Noise isolation has been tested by comparing energy of signals during significant seismic events. Sensitivity to variations in acceleration of free fall has been tested by means of cross-spectral analysis. © Published under licence by IOP Publishing Ltd.

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